

ABSTRACT

A GaAs E-Band transceiver front-end chip set is provided comprising three MMIC devices. The first device includes a circuit for receiving data at baseband, mixing the data with an LO signal having an E-Band frequency, and transmitting a resultant data stream at an upconverted E-Band frequency; a circuit for receiving data having an E-Band frequency, mixing the received data with an LO signal having an E-Band frequency, and downconverting the resultant mixed received signal to an IF; and a circuit for dividing a received LO signal at an E-Band frequency and communicating the LO signal to the transmission and receiver circuits. The second device comprises a circuit for receiving an LO signal at a reference frequency, and multiplying the LO signal to an E-Band frequency. The third device comprises a circuit for mixing the mixed received IF signal with an LO signal, and downconverting the resultant mixed received signal to a baseband frequency, and a circuit for generating an LO signal, communicating the LO signal to the second device, coupling the LO signal, dividing the coupled LO signal, and communicating the divided LO signal to the second downconversion circuit. The first and second devices may be manufactured by a p-HEMT process and the third device is manufactured by a MESFET process. Additionally, an E-Band communications system is provided which utilizes the aforementioned chip set.